

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) A method for inspecting a specimen defects of a product having a plurality of product units formed repetitively at different locations, comprising:

obtaining an image of a specimen the product units on the product having an appearance to be observed, wherein the specimen comprises a plurality of chips formed thereon, each chip having essentially the same pattern;

detecting regions of the image each having an appearance which differs from an expected appearance by greater than a preset threshold;

calculating feature amounts for the detected regions;

classifying the detected regions into groups of defect candidates, each group including defect candidates having similar or identical appearances, or defect candidates which are disposed at corresponding identical locations or adjacent locations on the different chips when overlapped with each other product units and have similar or identical appearances;

forming an aggregate of the feature amounts of the detected regions in the different chips product units, for each of the groups of defect candidates; and

determining for each chip product unit attributes for the detected regions by comparing the feature amounts of the detected regions belonging to each group of defect candidates with a distribution of the aggregate of the feature amounts for the group of defect candidates, the attributes including a broad classification of the detected regions based on whether the detected regions belonging to each group are genuine defects.

2. (Currently Amended) The method for inspecting a specimen defects according to claim 1, wherein the expected appearance is an appearance of an ideal pattern for the product.

3. (Currently Amended) The method for inspecting a specimen defects according to claim 1, wherein the expected appearance is an appearance of a reference pattern which is determined by comparing the appearances of different product units of the product.

4. (Currently Amended) The method for inspecting a specimen defects according to claim 1, wherein the feature amounts of each detected region comprise at least one of: inspection signal average value, inspection signal scattering data, reference signal average value, reference signal scattering data, brightness differential average value, brightness differential scatter data, detected coordinates position, and defect elliptical approximation size.

5. (Currently Amended) The method for inspecting a specimen defects according to claim 1 wherein defects candidates in a group are not genuine candidates if the number of chips product units having the defect candidates at corresponding identical locations or adjacent locations in the group is larger than a preset value.

6. (Currently Amended) The method for inspecting a specimen defects according to claim 1, wherein determining attributes for the detected regions comprises performing a subclassification of the genuine defects identified in the broad classification into different types of genuine defects.

7. (Currently Amended) A method for inspecting defects of a sample having a plurality of chips having essentially the same pattern sample regions repetitively formed at different locations, comprising:

capturing an image of the sample;
extracting defect candidates from the captured image;
classifying dividing the extracted defect candidates into groups; and
identifying, for each of the divided groups, genuine defects from the defect candidates by using criteria corresponding to the groups;
wherein in the step of classifying, each group including defect candidate which are disposed at corresponding identical locations or adjacent locations on the different sample regions when overlapped with each other.

8. (Canceled)

9. (Currently Amended) The method for inspecting a sample defects according to claim 7, wherein classifying dividing the extracted defect candidates into groups comprises capturing the sample images and extracting the defect candidates of the plurality of sample regions on the sample, by using data constituting an aggregate of results of observing the defects candidates in the plurality of chips sample regions on the sample.

10. (Currently Amended) The method for inspecting a sample defects according to claim 7, wherein identifying genuine defects from the defect candidates comprises determining the criteria corresponding to the groups by using information on feature amounts of the defect candidates belonging to the separate groups.

11. (Currently Amended) The method for inspecting a sample defects according to claim 10, wherein identifying genuine defects from the defect candidates comprises:

forming an aggregate of the feature amounts of the defect candidates in the plurality of sample regions in the sample, for each of the groups of defect candidates; and

comparing the feature amounts of the defect candidates belonging to each group with a distribution of the aggregate of the feature amounts for the group of defect candidates.

12. (Currently Amended) The method for inspecting a sample defects according to claim 10, wherein the feature amounts of each defect candidate comprise at least one of: inspection signal average value, inspection signal scattering data, reference signal average value, reference signal scattering data, brightness differential average value, brightness differential scatter data, detected coordinates position, and defect elliptical approximation size.

13. (Currently Amended) The method for inspecting a sample defects according to claim 7, further comprising classifying the genuine defects into different types of genuine defects.

14. (Currently Amended) The method for inspecting a sample defects according to claim 13, further comprising displaying the genuine defects and defect candidates.

15. (Currently Amended) The method for inspecting a sample defects according to claim 7, further comprising revising the criteria used to identify genuine defects from the defect candidates; and then identifying, for each of the divided groups, genuine defects from the defect candidates by using the revised criteria.

16. (Currently Amended) The method of inspecting a sample defects according to claim 15, further comprising displaying results of the identifying.

17. (Currently Amended) A method for inspecting a sample defects, comprising:
capturing an image of a sample, wherein the specimen comprises a plurality of chips formed thereon, each chip having essentially the same pattern;
generating a differential image by comparing the captured image with a pre-stored reference image;

extracting a plurality of defect candidates from the generated differential image by using a first threshold value;

grouping adjacent defect candidates among the plurality of defect candidates extracted into separate groups; and

identifying genuine defects from among the defect candidates of each of the groups,

wherein in the step of grouping, each group including defect candidates which are disposed at corresponding identical locations or adjacent locations on the different chips on the sample when overlapped with each other.

18. (Currently Amended) The method for inspecting a sample defects according to claim 17, wherein grouping adjacent defect candidates comprises grouping defect candidates that are adjacent to defect candidates having identical or similar feature amounts among the extracted plurality of defect candidates.

19. (Currently Amended) The method for inspecting a sample defects according to claim 17, wherein identifying genuine defects comprises determining criteria corresponding to the groups by using information on feature amounts of the defect candidates belonging to the separate groups.

20. (Currently Amended) The method for inspecting a sample defects according to claim 19, wherein the feature amounts of each defect candidate comprise at least one of: inspection signal average value, inspection signal scattering data, reference signal average value, reference signal scattering data, brightness differential average value, brightness differential scatter data, detected coordinates position, and defect elliptical approximation size.

21. (Currently Amended) A method for inspecting a sample defects, comprising:
capturing an image of a sample, wherein the specimen comprises a plurality of chips formed thereon, each chip having essentially the same pattern;
detecting defect candidates by comparing the captured image with a pre-stored reference image;
extracting feature amounts for the detected defect candidates;
storing images of the detected defect candidates and the feature amounts of the defect candidates; and
grouping adjacent defect candidates among the stored defect candidate into groups of defect candidates and each group includes defect candidates which are disposed at corresponding identical locations or adjacent locations on the different chips on the sample when overlapped with each other; and
identifying genuine defects from the defect candidates by using the stored defect-candidate images and feature amounts of the defect candidates.

22. (Currently Amended) The method for inspecting a sample defects according to claim 21, further comprising performing classification of the genuine defects.

23. (Canceled)

24. (Currently Amended) A method for inspecting a sample defects, comprising:
detecting defect candidates while sequentially inspecting patterns in chips formed repetitively on a sample, with respect to a plurality of chips formed on the sample;
grouping defect candidates into groups of defect candidates, each group including defect candidates which are disposed at corresponding identical locations or adjacent locations on the different chips when overlapped with each other;
setting a threshold value for defect extraction in accordance with feature amounts for the defect candidates for each of the groups; and
extracting genuine defects from among the defect candidates for each of the groups by using the threshold value.

25. (Currently Amended) The method for inspecting a sample defects according to claim 24, further comprising classifying the extracted genuine defects in accordance with the feature amounts for the genuine defects.

26. (Currently Amended) The method for inspecting a sample defects according to claim 24, wherein the feature amounts of each defect candidate comprise at least one of: inspection signal average value, inspection signal scattering data, reference signal average value, reference signal scattering data, brightness differential average value, brightness differential scatter data, detected coordinates position, and defect elliptical approximation size.

27-29. (Canceled)

30. (New) An apparatus for inspecting a specimen, comprising:
an image obtaining unit for obtaining an image of a specimen, wherein the specimen comprises a plurality of chips formed thereon, each chip having essentially the same pattern;
an image processing unit which processes the image obtained at the image obtaining step and detects regions of the image each having an appearance which differs from an expected appearance by greater than a preset threshold;

a feature amount calculating unit which calculates feature amounts of the detected regions;

a classify means for classifying the detected regions into groups of defect candidates, each group including defect candidates which are disposed at corresponding identical locations or adjacent locations on the different chips when overlapping with each other;

an aggregate means for forming an aggregate of the feature amounts of the detected regions in the different product units, for each of the groups of defect candidates; and

a determining means for determining each chip attributes for the detected regions by comparing the feature amounts of the detected regions belonging to each group of defect candidates with a distribution of the aggregate of the feature amounts for the group of defect candidates, the attributes including a broad classification of the detected regions based on whether the detected regions belonging to each group are genuine defects.

31. (New) The apparatus for inspecting a specimen according to claim 30, wherein the expected appearance is an appearance of an ideal pattern for the product.

32. (New) The apparatus for inspecting a specimen according to claim 30, wherein the expected appearance is an appearance of a reference pattern which is determined by comparing the appearances of different product units of the product.

33. (New) The apparatus for inspecting a specimen according to claim 30, wherein the determining means determines attributes for the detected regions comprises performing a sub-classification of the genuine defects identified in the broad classification into different types of genuine defects.

34. (New) An apparatus for inspecting a sample, comprising:

an image capturing unit which captures an image of a sample, wherein the specimen comprises a plurality of chips formed thereon, each chip having essentially the same pattern;

a defect candidate extracting unit which extracts defect candidates from the image captured by the image capturing unit;

a classifying unit which classifies the defect candidates extracted by the defect candidate extracting unit into groups; and

a genuine defect identifying unit which identifies, for each of the groups classified by the classifying unit, genuine defects from the defect candidates by using criteria corresponding to the groups,

wherein the classifying unit classifies the defect candidates into groups for each group includes defect candidates which are disposed at corresponding identical locations or adjacent locations on the different chips when overlapping with each other.

35. (New) The apparatus for inspecting a sample according to claim 34, wherein the genuine defect identifying unit identifies genuine defects from the defect candidates by determining the criteria corresponding to the groups by using information on feature amounts of the defect candidates belonging to the separate groups.

36. (New) The apparatus for inspecting a sample according to claim 34, wherein the genuine defect identifying unit further classifies the genuine defects into different types of genuine defects.

37. (New) The apparatus for inspecting a sample according to claim 34, further comprising a display unit for displaying the genuine defects identified by the genuine defect identifying unit and defect candidates defect candidate extracted by the extracting unit.

38. (New) An apparatus for inspecting a sample, comprising:

an image capturing unit which captures an image of a sample, wherein the specimen comprises a plurality of chips formed thereon, each chip having essentially the same pattern;

a differential image generating unit which generates a differential image by comparing the captured image with a pre-stored reference image;

a defect candidate extracting unit which extracts a plurality of defect candidates from the differential image generated by the differential image generating unit by using a first threshold value;

a grouping unit which groups adjacent defect candidates among the plurality of defect candidates extracted by the defect candidate extracting unit into separate groups; and

a genuine defect identifying unit which identifies genuine defects from among the defect candidates of each of the groups grouped by the grouping unit;

wherein the grouping unit groups the defect candidates into groups for each group includes defect candidates which are disposed at corresponding identical locations or adjacent locations on the different chips when overlapping with each other.

39. (New) The apparatus for inspecting a sample according to claim 38, wherein the grouping unit groups the defect candidates into groups that are adjacent to defect candidates having identical or similar feature amounts among the extracted plurality of defect candidates.

40. (New) The apparatus for inspecting a sample according to claim 38, wherein genuine defect identifying unit identifies genuine defects by determining criteria corresponding to the groups by using information on feature amounts of the defect candidates belonging to the separate groups.

41. (New) An apparatus for inspecting a sample, comprising:

an image capturing unit which captures an image of a sample, wherein the specimen comprises a plurality of chips formed thereon, each chip having essentially the same pattern;

defect candidate detecting unit for detecting defect candidates by comparing the image captured by the image capturing unit with a pre-stored reference image;

feature amount extracting unit for extracting feature amounts of the defect candidates detected by the defect candidate detecting unit;

image storing unit for storing images of the detected defect candidates and the feature amounts of the defect candidates extracted by the feature amount extracting unit;

defect candidate image grouping unit for grouping adjacent defect candidates among the defect candidate images stored in the image storing unit into groups of defect candidates and each group includes defect candidates which are disposed at corresponding

identical locations or adjacent locations on the different chips on the sample when overlapping with each other; and

genuine defect identifying unit for identifying genuine defects from the defect candidates by using the defect candidate images and feature amounts of the defect candidates stored by the image storing unit.

42. (New) The apparatus for inspecting a sample according to claim 41, further comprising a genuine defect classification unit for classifying the genuine defects identified by the genuine defect identifying unit.